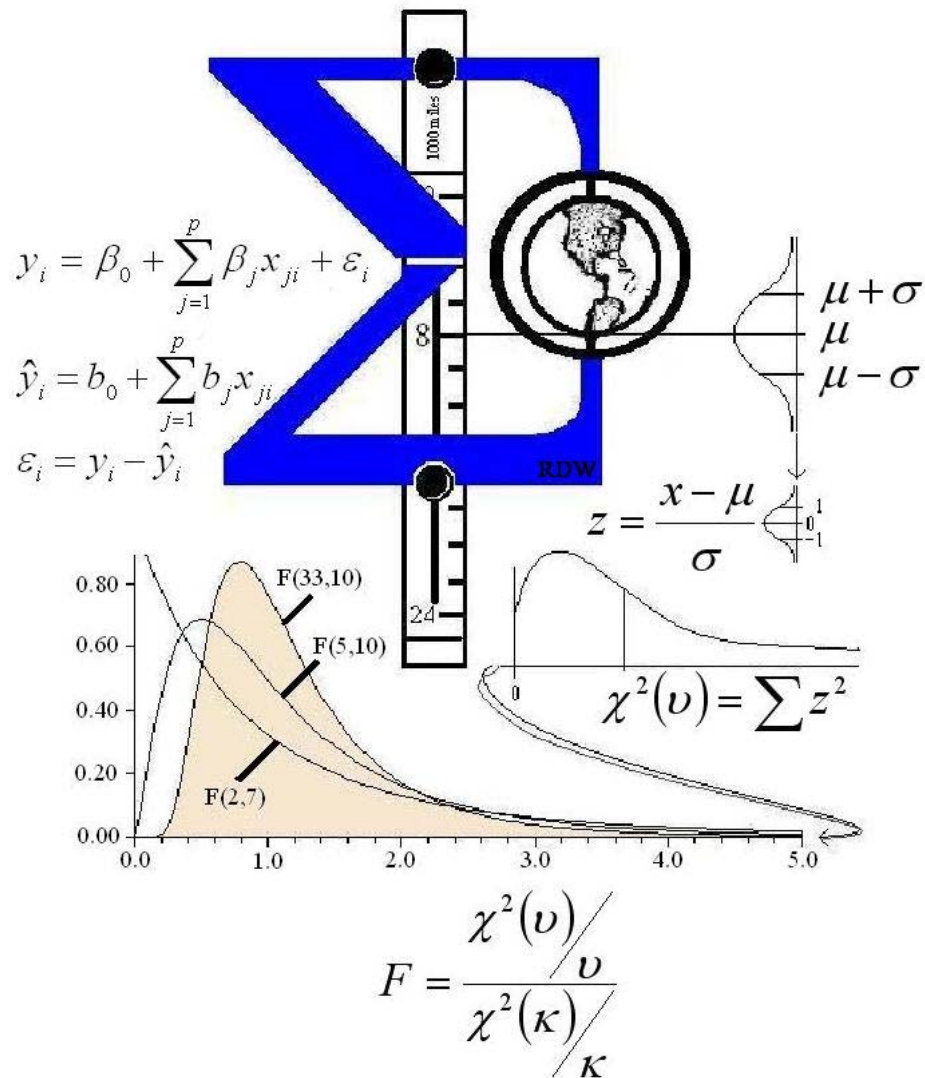HANDBOOK FOR Ph. D. GRADUATE STUDENTS

IN STATISTICS/PROBABILITY PROGRAM

UNIVERSITY OF SOUTH FLORIDA

TAMPA, FLORIDA, USA

OCTOBER 2007

ORGANIZATIONAL CHART OF THE
STATISTICS/PROBABILITY Ph. D. PROGRAM

PROGRAM DIRECTOR OF STATISTICS
Professor Chris P. Tsokos

GRADUATE PROGRAM ADVISORY COMMITTEE
Three Senior Faculty Members
Professors: Chris P. Tsokos, K. Ramachandran and G. S. Ladde

GRADUATE PROGRAM SPECIALIST
Ms. Sarina Maldonado

OCTOBER 2007

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1. INTRODUCTION

The purpose of this Handbook is to supplement the Graduate Catalog of the University of South Florida, Tampa, by instructing the Statistics/Probability Ph.D. graduate students of those policies, procedures and guidelines that are not found in the Graduate Catalog. It is expected that the student should be familiar with both the Graduate Catalog and the Handbook.

2. ADMISSION TO THE PROGRAM

Students interested in this program should apply for admission at the Mathematics and Statistics Academic Program Specialist, Ms. Sarina Maldonado for the Statistics/Probability. As per the rules of the University of South Florida, students accepted to the Ph.D. program must have:

(i)   A master's degree or at least 30 hours of graduate work completed in courses relevant to the Statistics/Probability Program, or a bachelor's degree with a strong record of undergraduate/graduate courses relevant to the Statistics/Probability Program,

(ii) GRE total score of at least 1000 (verbal and quantitative) and at least 650 quantitative score,

(iii) TOEFL score of at least 550 if Paper Based, at least 213 if Computer Based and at least 79 if Internet Based for a foreign student whose native language is not English, and

(iv) Students whose native language is not English should obtain a score of at least 55 in the TSE (Test of Spoken English) to be eligible for Teaching Assistantship.

The admission to the Graduate Program is administered by the Two Member Subcommittee of the Graduate Faculty of Statistics Program. The Senior Member of the Faculty is the Chairperson of this Subcommittee. Currently, the Admission Subcommittee is composed of Dr. Ramachandran-Chairperson and Dr. Kim-Member.

The role and scope of this Subcommittee is to undertake the task of all issues/concerns regarding the Graduate School Admission Process. In summary, the Subcommittee is responsible for:

a.   Developing and maintaining the Statistics Graduate Program's admission policies, procedures, guidelines, and requirements that are compatible with the College of Arts-Sciences and with USF Graduate School at Tampa for the prospective graduate students.

b. Developing and maintaining the policies, procedures, guidelines, and requirements, for the award of Teaching Assistantships that are compatible with the College of Arts and Sciences and USF Graduate School at Tampa for the prospective Graduate Teaching Assistants.

c. Evaluating the Conditional or Provisional Admission Status of the student.

d. In addition, evaluation and acceptance of transfer of graduate course work of the student.

3. GENERAL ACADEMIC ADVISEMENT

After the admission to the Graduate School, the Statistics/Probability student will consult with the Program Director/Advisor. During the advisement process, the Program Director/Advisor will advise the incoming graduate student to follow the academic guidance/instructions as per the description in this Handbook in the words and deeds. In short, the graduate students:

1. Are responsible for reading, familiarizing and understanding all policies, procedures, regulations/guidelines and requirements of University of South Florida Graduate School and the College as per Graduate Catalog and the College Level Document,
2. Need to progress her/his academic degree plan timely manner,
3. Need to maintain the grade point average (GPA) "3.0" or better,
4. Expected to complete minimum 90 hours course work or earned Master's degree in Statistics plus 60 hours which will include at least 16 hours dissertation work,
5. Graduate students who are international and /or Graduate Teaching Assistants (GTA) need to be progressing in a satisfactory manner towards her/his degree plan with minimum number of credit hours per semester,
6. Expected to be responsible for taking any assistance by contacting the Program Director/Advisor with regard to any particular situation that may arise during the course of graduate study at the USF,
7. Expected to participate in the academic activities that are beneficial to the academic contact, career, development and intellectual growth,
8. Expected to mark and to meet the important dates (registration, qualifying and comprehensive examinations, dissertation defense, graduation, and etc.) on her/his Calendar,
9. In addition, domestic students who are TA's are responsible for fulfilling the requirements of the Florida Residency classification. International students who are TA's are excluded from this requirement.

4. TEMPORARY ADVISOR/SUPERVISOR

During the first semester, the Program Director/Advisor may designate a student's Temporary Advisor/Supervisor. This Advisor/Supervisor may be changed at any time, if it is in the student's academic interest and benefit. The student must consult with the Temporary Advisor/Supervisor before each registration or when adding or dropping a course. This

Advisor/Supervisor may assist you for registering the courses. Moreover, he/she will provide academic guidance to the student, and answers to academic questions with regard to academic matters. It is recommended that the student with "3.0" or better GPA continues to be in touch with the Temporary Advisor/Supervisor with regard to the registration and other academic matters until her/his completion of Ph.D. Part I and Part II Examinations. In summary, the objective of the Advisor/Supervisor is to provide a high quality academic advisement and environment to meet, to promote the academic needs and goals, and to fulfill all graduation requirements in an enjoyable, timely and successful manner under the guidance of the graduate faculty.

5. ACADEMIC PROBATION AND DISMISSAL

The graduate student is required to maintain a GPA of "3.0" or better. The student with either less than a "3.0" average or at most two C's will be placed on academic probation. A student who has a substandard average (GPA below 3.0) for two successive semesters may be dismissed by the Dean of the Graduate School. As the by-product of this, the student who has the financial support will be losing the support. In summary, the student needs to have "GOOD STANDING" in her/his graduate program.

6. GRADUATE PROGRAM ADVISORY COMMITTEE

The Graduate Program Advisory Committee (GPAC) in statistics is composed of three senior faculties. Professors: C. Tsokos, K. Ramachandran and G. Ladde are the members of this committee. Professor Tsokos is Chairman of this committee.

The function of this committee is:

a. To develop and to maintain general program guidelines, policies, procedures and regulations affecting the Graduate Programs in Statistics,
b. To develop plans to strengthen the Graduate Programs to meet the needs and demands in the 21st Century,
c. To make efforts to attract highly qualified graduate students into the program by creating learning environment in the Statistics Group,
d. To seek financial support to our graduate students from both public and private sources, namely, from industries, business and government (both State and Federal Level),
e. To find the ways by which to expose our faculty and graduate students to the financial prospective sources,
f. To establish the connections with the prospective sources of employment for our graduate students,
g. To generate an environment to have frequent interactions between the statistics faculty, graduate and undergraduate students,
h. To increase and to involve both graduate and undergraduate students' participation in organizing academic activities,
i. To provide information about the scope and opportunities of statistics in the 21st Century

In summary, one of the major tasks of this committee is to not only provide the future directions and vision to our graduate and undergraduate students, but also involve them in the 21st Century problem solving processes as early as possible. This would lead to better opportunities and preparedness to our graduates.

7. Ph. D. CORE QUALIFYING EXAMINATION I & II

The purpose of the Ph D. Qualifying Examination I is to evaluate not only the applications of breadth and depth of understanding of algorithms (theorems), concepts and techniques, but also the ability of the integration of the knowledge in a systematic and coherent way. In short, the ability and creativity of problem solving process are adjucated. After completion of certain basic Ph.D. core course work, the student will be encouraged by the Temporary Advisor, or at least one of the Graduate Faculty with the consent of the Program Director/Advisor to take the Ph.D. Qualifying Examinations. The student should have completed the core courses satisfactorily as well as prepared themselves for the examination in the two different areas of study as follows:

> -Core Sequence I -Applied Statistics
> -Core Sequence II-Mathematical Statistics.

These examinations are offered three times per calendar year in September, January and May. Each examination is administered by two graduate faculty members in the statistics program. Students are expected to pass these examinations no more than two attempts.

Ph.D. Core Qualifying Examination I: The Ph.D. Core Qualifying Examination covers the material concerning the following core courses:

> STA-5166 -Statistical Methods I,
> STA-6167-Statistical Methods II
> STA-6208-Linear Statistical Models.

Ph.D. Core Qualifying Examination II: The Ph.D. Core Qualifying Examination covers the material concerning the following core courses:

> STA-5326 –Mathematical Statistics I,
> STA-6326-Mathematical Statistics II.

After completion of the above core course requirement and upon the advisement of the Temporary Advisor/Graduate Faculty, the student is eligible to take Core Qualifying Examinations towards the Ph.D. under the consultation with the Program Director. Each of the Qualifying Examinations is administered by a Subcommittee composed of at least two graduate faculties in the program. The Examination Subcommittee is approved by the Program Chairman of Probability/Statistics.

8. PERMANENT ADVISOR AND GRADUATE STUDIES COMMITTEE

After a successful completion of the Ph.D. Core Qualifying Examination-I, the student should find a faculty member who will agree to serve as her/his Permanent Advisor (Major Professor). This advisor must be approved by the Statistics Graduate Program Advisory Committee (GPAC). At this time, the Permanent Advisor coupled with Graduate Program Advisory Committee will constitute the Graduate Student's Supervisory Committee. The student is required to obtain signatures of all the members of his Supervisory Committee in the Supervisory Committee Appointment Form. This form must be approved by the Ph.D. Program Director and the College Dean. This committee will take over all the duties of the student's Temporary Advisor.

9. Ph.D. ELECTIVE QUALIFYING EXAMINATION

After successfully passing the Core Qualifying Examinations- I & II, completion of the minimum course requirements approved by the Graduate Student's Supervisory Committee (GSSC), and in consultation with his/her Permanent Advisor (Major Professor), the student will take the Ph.D. Qualifying Examination-II. At this stage, under the guidance of the Major Professor, the topic of interest is slected by the student. After the preliminary study in the area of interest, the student proposes the research problems, and presents the proposal to the GSSC. The GSSC serves as the Ph.D. Elective Qualifying Examination committee. Upon the successful presentation of the research proposal, the student is ready to begin her/his dissertation work. It is also recommended that the student in consultation with the Permanent Advisor to present periodically the development of dissertation research progress to the GSSC. This can be achieved either in oral or written form.

10. APPLICATION FOR CANDIDACY AND SUPERVISORY COMMITTEE

Upon passing the Ph.D. Elective Qualifying Examination, the student becomes eligible for the admission to doctoral candidacy. At this time, student's Ph.D. Supervisory Committee can be revised. Any revision or change to the Graduate Student Supervisory Committee has to be approved by the Graduate Program Advisory Committee (GPAC). A reason for the revision must be included. The application for doctoral candidacy must be approved by the student's Major Professor, the Program Director or Department Chair, the College Dean and the Assistant Dean of the Graduate School. The Admission to Doctoral Candidacy form will be accompanied by a tentative program of study listing all courses, which will be counted towards the degree including those not yet attempted. This document, when approved, assures the student that upon completion of the prescribed program and upon acceptance of the dissertation, the degree will be awarded. Changes in the agreed upon program of study are permitted if formally submitted, but they may result in additional requirements being placed upon the student.

11. DISSERTATION RESEARCH

Doctoral Candidacy is not effective until approved by the Graduate School. After the approval of Doctoral Candidacy, the student may officially enroll in dissertation hours and can start research by enrolling in MAT-7980-Doctoral Dissertation. The dissertation represents the culmination of the student's academic efforts; and hence expected to demonstrate original and independent research activity and be a significant contribution to understanding of the subject area. It is expected that the results will be submitted for the publication in a leading journal in the student's field of study. Final copies of doctoral dissertation must be prepared according to Graduate School regulations found in the Graduate Catalog. These regulations are strictly adhered to, so it is wise for the student to work closely with the Graduate Office during the final semester to see that all forms and rules are properly executed. The final dissertation should be professionally prepared, including typing, figures, artwork, etc.

12. ORAL DEFENSE OF THE DISSERTATION

After the completion of the dissertation research work, the candidate must present an oral defense of the dissertation. This oral examination will be open to all members of the University Community, with questioning directed by the student's Supervisory Committee. A request for the dissertation defense must be submitted no later than five weeks before the date listed by the Graduate Catalog for submission of the final approval dissertation. Please see the Academic Program Specialist for information on the forms required to request Dissertation Defense and dates. The dissertation defense report must be filed with three unbound copies of the final approved dissertation no later than three weeks before the date of conferral of the degree. At least five members of the faculty, including all members of the Supervisory Committee, must be present during the defense.

13. LAST SEMESTER STUDENT'S DUTY

During the last semester of the graduate study, it is the duty of the student to be aware of deadlines listed by the Graduate School. These deadlines listed in the current Graduate Catalog, and may change yearly. The important deadlines are:

1. Deadline for Graduation: The final dates for Ph. D. candidates to file:
   (i)   Application for Graduation,
   (ii)   Payment of Graduation Fee,
   (iii)   Final Degree Plan,
   (iv)   Format Check of the manuscript.
2. Final Date for Requesting Dissertation Defense (at least 3 weeks before defense)
3. Final Date for Submitting Completed Copy of Dissertation to Examining Committee (at least two weeks prior to defense)
4. Final Date to hold Dissertation Defense (at least three weeks before the commencement)
5. Final Date for Submitting Copy of Dissertation to the Graduate School for the Preliminary Check on Mechanical Format

6. Final Date for Submitting Approved Dissertation, Dissertation Defense Report, Paying Binding Fee and Dissertation Microfilming Fees (approximately one month before the end of a regular semester)

The dates listed above are final dates, and it is advisable to fulfill these well in advance, since complications usually arise. The student must be registered for a minimum of 2 dissertation hours in the semester in which the degree is awarded. The students are strongly advised to be familiar with the deadlines.

14. COURSE REQUIREMENT FOR Ph. D. PROGRAM IN STATISTICS/PROBABILITY

A student with bachelor's degree (BA/BS) entering the Ph.D. Program in Statistics/Probability should satisfy the following requirements:

I. At least Ninety hours course work is required.

II. Each student must satisfactorily demonstrate competence in the following CORE courses. Substitution may be allowed on approval by both the Program Director and Graduate Program Committee in Statistics and Probability.

1. STA-5166-Statistical Methods I
2. STA-6167-Statistical Methods II
3. STA-5326-Mathematical Statistics I
4. STA-6326-Mathematical Statistics II
5. STA-6208-Linear Statistical Models

III. Each student must satisfactorily demonstrate competence in the following REQUIRED courses. Substitution may be allowed on approval by both the Program Director and Graduate Program Committee in Statistics and Probability.

1. STA-5446-Probability Theory I
2. STA-6447-Probability Theory II
3. STA-5526-Nonparametric Statistics
4. STA-6746-Multivariate Analysis
5. STA-6876-Time Series Analysis
6. STA-6932-Survival Analysis

IV. Each student is recommended to select a few elective courses from the following list of ELECTIVE/SELECTIVE courses to demonstrate the depth and the breadth of her/his 21st Graduate Program with the approval by both the Program Director and GSSC in Statistics/Probability.

1. STA-6206-Stochastic Processes
2. STA-6392-Stochastic Dynamic Modeling
3. STA-6877-Time Series Analysis II
4. STA-6879-Nonlinear Time Series Analysis

5. STA-6881-Multivariate Iterative Processes with Applications
6. STA- Special Topics Courses

V. Each student is required to complete at least four out of the following five sequences.
1. Statistical Methods I & II (STA 5166 & STA 6167)
2. Mathematical Statistics I & II (STA 5326 & STA 6326)
3. Linear Models STA 6208 & Multivariate Analysis STA 6746
4. Probability I & Probability II (STA 5446 & STA 6447)
5. Time Series Analysis STA 6876 & Stochastic Processes STA 6206

VI. Each student is required to complete at least 16 credit hours of MAT 7980 Doctoral Dissertation work. It is expected that each graduate student is required to enroll for a minimum of 2 doctoral dissertation credit hours until graduation.

15. A SEQUENTIAL COURSE WORK COMPLETION PLAN

We highly expect that the graduate student in the Probability/Statistics Ph. D. Program is fulfilling her/his Degree Program in timely and satisfactory manner. In order to achieve this goal, after completing the basic prerequisite course work requirement(s) (if any), we strongly recommend the graduate student to follow the core course, required course sequence and selective/elective course requirement in the following sequential order.

1. FALL:

- STA-5166-Statistical Methods I
- STA-5326-Mathematical Statistics I
- STA-5446-Probability Theory I

2. SPRING:

- STA-6167-Statistical Methods II
- STA-6932-Mathematical Statistics II
- STA-5526-Nonparametric Statistics

3. FALL:

- STA-6208-Linear Statistical Models I
- STA-6746-Multivariate Analysis
- STA-6932-Survival Analysis

4. SPRING:

- STA-6467-Probability Theory II
- STA-6867-Time Series Analysis

-STA-Selective/Elective

5. FALL:

- STA-6206-Stochastic Processes
- STA-Special Topics Courses
- MAT 7980 -Dissertation Research

6. SPRING:

- STA-Selective/Elective courses
- STA-Special Topics Courses
- MAT 7980 -Dissertation Research

7. FALL:

- STA-Selective/Elective courses
- STA-Special Topics Courses
- MAT 7980 -Dissertation Research

8. SPRING:

- STA-Selective/Elective courses
- STA-Special Topics Courses
- MAT 7980 -Dissertation Research

16. STATISTICS FACULTY

Statistics/Probability Programs are in the Department of Mathematics and Statistics. There are 5 full time tenured/tenure-track and 2 adjunct faculties in the Statistics Group. This group is very active and is internationally well-known and well-established. They are as follows.

PROFESSORS:

1. Chris P. Tsokos, Ph.D. from University of Connecticut, 1968
   Distinguished University Professor and Founder and Executive of USOP

2. Kandethody M. Ramachandran, Ph.D. from Brown University, 1987

3. Gangaram S. Ladde, Ph.D. from University of Rhode Island, 1971
   Founder and Editor-In-Chief, Journal of Stochastic Analysis and Applications

ASSISTANT PROFESSORS:

1. George Yanev, Ph.D.'s from University of Sofia, Bulgaria 1992 and University of South Florida, 2001

2. Wonkuk Kim, Ph.D. from State University of New York at Stony Brook, 2007

ADJUNCT PROFESSORS:

1. Rebecca D. Wooten, Ph.D. from University of South Florida, 2006

2. Alfred K. Mbah, Ph.D. from University of South Florida, 2007

RESEARCH INTERESTS:

Dr. Chris P. Tsokos: Statistical Analysis and Modeling; Operations Research; Time Series Analysis and Forecasting Systems; Probabilistic Modeling; Ecology-Biostatistics/Biomathematics; Quality Control Analysis; Reliability Analysis-Ordinary and Bayesian.

Dr. K. Ramachandran: Queuing Processes and Communications Networks; Delay Systems; Deterministic and Stochastic Control Problems Statistical Learning Theory; Deregulated Electricity Market Problems; Multi-agent Learning Strategies for Intelligent Process Control; Stochastic Differential Games; Game Theory Applications; Applications of Statistics; Homeland Security Problems; Software reliability; Micro-array Analysis; Mathematical Finance.

Dr. G. S. Ladde: Dynamic Reliability Analysis and Control; Stochastic Modeling of Dynamical Processes in Biological, Chemical, Engineering, Medical, Physical and Social Sciences; Time Series Analysis and Applications; Deterministic and Stochastic Qualitative and Quantitative Properties of Dynamic Systems; Stability Theory; Stochastic Estimation and Filtering; Deterministic and Stochastic Control and Differential Games; Multivariate/Large-Scale Systems Analysis; Hereditary Systems; Stochastic Modeling of Network Dynamics; Multi-agent and Multi-Market/Finance; Stochastic Approximation and Statistical Analysis; Stochastic Hybrid Dynamical and Extreme Statistical Analysis.

Dr. George Yanev: Branching Processes: Controlled Branching Processes, Varying Environment, and Extremes, Branching Trees; Statistics of Branching Processes; Statistical Modeling in Biology and Ecology.

Dr. Wonkuk Kim: Mixture Models, Statistical Genetics, Survival Analysis, Data Mining.

Dr. Rebecca D. Wooten: Statistical Analysis (Parametric and Non-parametric – Univariate, Bivariate and Multivariate), Statistical Modeling (Linear and Non-linear), Time Series Analysis (Stationary and Non-stationary), Computerized algorithms for statistical analysis, and Research emphasizing environmental health, life science, geophysics and education, studying such topics as Hurricanes, Lightning, Rainfall, Floods, red Tide, and Volcanoes.

Dr. Alfred K. Mbah: Records; Statistical Modeling; Extreme Value Theory; Missing data Analysis.

For more details about the Statistics Faculty, please see the University of South Florida website at www.usf.edu

17. THE EDITORIAL HEADQUARTER OF THE INTERNATIONAL JOURNAL OF STOCHASTIC ANALYSIS AND APPLICATIONS

The Department of Mathematics and Statistics, University of South Florida is the Editorial Headquarter of the more than the quarter century old International Journal of Stochastic Analysis and Applications (JSAA). It was established in 1982. It is abstracted/indexed in Applied Mathematics Reviews, Current Index to Statistics, Geographical Abstracts (GeoAbstract), ISI CompuMath Citation Index, Mathematical Reviews Database, MathSciNet, VNITI Referativnyi Zhurnal (Abstracts Journal), Zentralblatt MATH. It is a refereed journal and it maintains its high quality refereeing process. Currently, it is bimonthly publication, and is published by Taylor & Francis Group. The students and faculty of the University of South Florida have a natural connection for the publication of their research work in the journal. For further information, please contact Professor G. S. Ladde, Founder and Editor-In-Chief or Ms. Mary Ann Wengyn, Editorial Secretary of the JSAA.

18. APPENDIX: WHAT IS STATISTICS? AND WHAT DO STATISTICIANS DO?

A WORD document of the American Statistical Association (ASA) provides answers to these questions. This is extracted from the Information Directory of the ASA. For further information, please see the website of ASA: asainfo@anstat.ogr